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Summary of the Geospace Plan
for
Living With a Star

The Geospace Plan for Living With a Star (LWS) is based on the overarching objective of the LWS initiative to understand the effects of solar variability on those geospace phenomena that most affect life and society. It defines which phenomena occurring in geospace apply most significantly to the LWS goals (radiation exposure, communications and navigation errors and outages, energy forcing of the upper atmosphere), and uses the LWS priority ranked goals to prioritize where studies are essential to gain an understanding and characterization of the defined phenomena. The plan describes an approach where the characterization is accomplished with a core set of measurements over solar cycle time scales and the understanding is achieved with a more complete set of measurements over a shorter period. Because the effects in geospace relevant to LWS occur over a large region, the Geospace Plan invokes a distributed approach to understand the associated phenomena. The plan identifies two regions of geospace where these phenomena primarily occur, specifically the Earth's radiation environment and the ionosphere/thermosphere region.

The Geospace Plan has four components:

- **Geospace Missions Network**: This the primary component of the Geospace plan. The goal of the Geospace Missions Network is to provide measurements required to meet the LWS objective of understanding the response of geospace to solar variability and its impact on society. It consists of several dedicated NASA spacecraft located in key geospace regions. Possible scenarios might include in-situ measurements with multiple spacecraft in geo-transfer orbits, spacecraft in different inclination low-Earth orbits, and a high-inclination elliptical remote sensing spacecraft. To achieve the LWS goals the Geospace Missions Network is intended to fly concurrently with other LWS missions, in particular the SDO, so that the response of geospace is characterized as a function of well-specified variable solar energy inputs.
- **Missions of Opportunity**: These are those flight opportunities where LWS Geospace might provide instrumentation and or resources to an existing space-based platform in order to acquire needed measurements for the characterization and understanding of geospace; e.g. C/NOFS flight of CINDI under the Explorer program.
- **Leveraged Programs**: These are current or future programs outside of LWS that provide geospace products that are relevant to meeting the LWS objectives. These products might include data sets, investigation results, models and model results; e.g. DMSP, POES, GOES, GPS measurements, ground based programs.
- **Instrument Development Program**: This is a mechanism to incorporate recent technological advances for the design and development of small, efficient and low-resource flight instrumentation in the Geospace Missions Network and Missions of Opportunity. It is intended to begin in FY02.

The Geospace Plan includes the immediate formation of a **Geospace Mission Definition Team** (GMDT) that responds to NASA Headquarters LWS. The GMDT responsibilities include defining/finalizing the Geospace Missions Network, recommending Missions of Opportunity, identifying Leveraged Programs products and recommending targeted instrumental development areas. The GMDT will use as a basis for its recommendations the LWS Science Architecture Team's (SAT) science and measurement priorities for geospace. The GMDT will work closely with the SAT and LWS Program Office.